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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/773,989	02/06/2004	Robert K. Barr	52183	7098

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EXAMINER	
JOHNSON, CONNIE P	
ART UNIT	**PAPER NUMBER**
1752	
MAIL DATE	**DELIVERY MODE**
07/18/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/773,989	BARR ET AL.	
	Examiner	Art Unit	
	Connie P. Johnson	1752	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 March 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,4-8,10-14 and 16-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,4-8,10-14,16-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. The remarks and amendment filed October 16, 2006 have been entered and fully considered.

2. Claims 1-2, 4-8 and 10-20 are presented.

   a. Claims 1, 5 and 11 are amended.

   b. Claim 15 is cancelled.

   c. Claims 19-20 are new.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1, 2 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tefler et al., U.S. Patent No. 5,681,676 in view of Kuchta, U.S. Patent No. 5,112,721 and further in view of Weed et al., U.S. Patent Publication No. 2002/0064728 A1.

Tefler teaches a method of applying an imaging composition comprising a sensitizer to a substrate (workpiece) and projecting a 3-D image onto the imaging composition so as to affect a color change in the imaging composition. By applicant's own admission on page 6 of the specification, the laser power is conventionally 5mW or

less. The difference between the Tefler reference and the application is that Tefler does not necessarily use a cyclopentanone based conjugated sensitizer in his method.

However, Kuchta in analogous art, teaches a cyclopentanone based conjugated sensitizer used in imaging compositions. Sensitizers are known as dyes and provide color in imaging compositions (See Kuchta, column 1, lines 27-30). Tefler teaches the use of several different types of dyes suitable for the invention including dyes, which can undergo a change in color upon increase in temperature. Kuchta's compounds fit this description. It would have been obvious to one of ordinary skill in the art to use the compounds of Kuchta in the method of Tefler because Tefler's process requires dyes, which are radiation sensitive, and undergo color change with an increase of temperature. Tefler nor Weed teach reducing agents in an imaging composition.

However Weed, in analogous art, teaches a composition comprising photosensitizing dyes that undergo color change upon irradiation (Weed, [page 7, 0099]) combined with other components such as a quinone redox couple comprising 9,10-phenanthrenequinone and an acyl ester of triethanolamine. The combination of these components forms an effective color forming composition when exposed to radiation. It would have been obvious to one of ordinary skill in the art to combine the redox couple of Weed with the cyclopentanone based sensitizer of Kuchta and use the combination in Tefler because Tefler teaches that his process for making 3D images require color forming compositions. These color forming compositions are radiation sensitive.

5. Claims 11, 12 and 15-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tefler et al., U.S. Patent No. 5,681,676 in view of Kangas et al., U.S. Patent no. 5,563,023 and in view of Applicant's admission.

Tefler teaches a method of applying an imaging composition comprising a sensitizer to a substrate (workpiece) and projecting a 3-D image onto the imaging composition, including a sensitizer, so as to affect a color change in the imaging composition. According to page 6 of the specification, applicant discloses that a laser power of 5mW or less is used to prevent worker hazards. The imaging composition is imagewise exposed using a laser (col. 10, line 52). Tefler does not teach an adhesive layer on the opposite side of the support.

However, Kangas teaches making photoimageable elements having a photosensitive composition (imaging composition) on a substrate which has an adhesive applied to the opposite side (see Kangas' claim 9 and column 2, lines 8-12). Further, Kangas teaches photosensitive polymers that are sensitive to light in the visible and UV range. The visible range is 400nm to 800nm. Kangas teaches the photosensitive compounds as acrylate oligomers that form polymers when exposed to radiation (col. 3, line 63). Therefore, the photosensitive polymers are sensitive to light in the range of 300 to 600nm as claimed. It would have been obvious to one of ordinary skill in the art to use an adhesive on the opposite side of the substrate with releasing ability in order to place the image on additional workpiece if required.

6. Claims 11, 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tefler et al., U.S. Patent No. 5,681,676 in view of Kangas et al., U.S. Patent No. 5,563,023 as applied to claims 11 and 12 above, and further in view of Weed et al., U.S. Patent Publication No. 2002/0064728 A1 and Applicant's own admission.

Tefler teaches a method of applying an imaging composition comprising a sensitizer to a substrate (workpiece) and projecting a 3-D image onto the imaging composition so as to affect a color change in the imaging composition. Kangas teaches polymer film supports (substrates) with an adhesive on the opposite side of the support (substrate). By applicant's own admission, the laser power is no more than 5mW to prevent worker hazard (see page 6 of specification). The combination of Tefler nor Kangas teach reducing agents, such as quinones and acyl esters of triethanolamines in the imaging composition.

However Weed, in analogous art, teaches a quinone redox couple comprising 9,10-phenanthrenequinone and an acyl ester of triethanolamine as an effective color forming composition [Weed, 0090]. It would have been obvious to one of ordinary skill in the art to use the redox couple of Weed in the method of Tefler because Tefler teaches color-forming compositions, while Weed teaches reducing agents that provide sufficient color or shade change in photopolymerizable compositions.

7. Claims 5-8, 10, 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kaufman, U.S. Patent No. 6,547,397 B1 in view of Parker et al., U.S. Patent No. 6,618,174 B2 in view of Tefler, U.S. Patent No. 5,681,676, in view of Kuchta,

U.S. Patent No. 5,112,721 and further in view of Weed et al., U.S. Patent Publication No. 2002/0064728 A1.

Kaufmann teaches a 3-D imaging method comprising applying an imaging composition to a work piece, providing a 3-D imaging system, measuring the distance between the projector and a sensor in the workpiece, positioning the workpiece and applying energy to the imaging composition to affect a color change. Figure 1 of Kaufman is the same as figure 1 of the application. The range finding system determines the distance between the projector and a sensor as described in column 8. The optical signal is converted to a digital signal and analyzed by the controller module, element 210, which is the same as applying an algorithm to the results (col. 8, lines 65-67 and col. 9, lines 1-30). As shown in Figure 1, Kaufman teaches the energy beams from the projector fall on sensors and on an internal triangular shape of the workpiece which is not identified in Figure 1. However, because the energy beams fall on this area, it would have been obvious to one of ordinary skill in the art that this is the area to be imaged and must have an imaging composition thereon. Kaufman does not teach a step of removing unwanted portions of the imaging composition from the workpiece. None the less, it would have been obvious to one of ordinary skill in the art to remove unwanted portions because the imaging composition comprises a plastic film and therefore would easily perforate to remove unwanted portions. Kaufman does not teach applying an imaging composition to a workpiece and applying the 3D imaging composition having a cyclopentanone based compound with an amount of energy to

affect color change. Further, Kaufman does not specifically teach drilling holes at the indicators for joining fasteners to the workpiece.

However, Parker teaches a method of making a pattern on a workpiece. The pattern may be a three dimensional holographic pattern (col. 2, lines 37-45). The method comprises drilling holes into the workpiece by photoablation to form apertures (col. 8, lines 33-39). It would have been obvious to one of ordinary skill in the art to drill holes in the workpiece of Kaufman with a laser because Parker teaches laser ablating the workpiece to form apertures in thin membranes. The apertures in thin membranes are representative of placing holes in the workpiece, by which fasteners can be applied.

Tefler teaches applicant's process of imaging 3D compositions using a laser. It would have been obvious to use the process of Tefler in the method of Kaufman because Tefler merely specifies the imaging process while Kaufmann outlines the manner in which the process is used in the laser system for projecting a 3D image. The amounts of power the system projects and the amount of energy are at conventional levels. By applicant's own admission, generally, more than 5mW of power for the laser is not used because this is known to present hazards to workers. (instant specification, page 3). The amount of energy is directly related to the amount of power used by the projection system and so can be optimized. Tefler further teaches a support, generally a polymeric film, with UV screening layers is applied on both sides of the support with an adhesive as in instant claim 5 (col. 12, lines 46-49 and col. 14, lines 1-12).

Kuchta, in analogous art, teaches cyclopentanone based photosensitizers in a photopolymerizable composition (see Kuchta, col. 5, line 66). It would have been

obvious to one of ordinary skill in the art to use the compound of Kuchta in the process of Tefler because Tefler's process requires a radiation-sensitive compound, which affects color change upon increase in temperature. Kaufman, Tefler nor Kuchta teach specific reducing agents as claimed.

However, Weed teaches a quinone redox couple comprising 9,10-phenanthrenequinone and an acyl ester of triethanolamine as an effective color-forming composition (Weed, [0090]). It would have been obvious to one of ordinary skill in the art to use the redox couple of Weed in the method of Tefler because Tefler teaches color-forming compositions, while Weed teaches reducing agents that provide sufficient color or shade change in photopolymerizable compositions.

Response to Arguments

8. Applicant's arguments filed 10/16/2006 have been fully considered but they are not persuasive.

9. Applicant argues that Tefler does not teach applying a 3D image onto an imaging composition to affect a color change in the imaging composition. Further, applicant argues that two-dimensional images are used to form three-dimensional images which are generated away from the imaging compositions.

Tefler teaches a 3D imaging composition. Further, applicant is directed to column 7, lines 65-67 and column 8, which discloses the formation of color-forming compositions for a 3-D imaging method. In column 12, lines 39-49, Tefler teaches applying the color-forming composition to a substrate (workpiece). Since Tefler teaches applying a 3D imaging composition to a workpiece and the composition comprises the

same sensitizers as claimed, then the 3D image composition would affect a color change upon exposure to laser light. This method is representative of the currently claimed 3-D imaging method. The 3D image is not formed away from the imaging composition. The 3D image is formed behind the imaging composition. That the 3-D image may be formed behind the composition instead of on top of the composition is not relevant because the 3-D image is still on the imaging composition.

10. Applicant argues that Tefler teaches using an imaging media which is sensitive to infrared, not visible light. Further, Tefler teaches away from the color-forming compositions which are sensitive to visible light.

Tefler does teach infrared dyes in the color forming composition. However, these are only preferred dyes. The infrared dyes are not representative of all dyes that can be used. Tefler also teaches dyes in the visible range. The visible range is defined as 400-800nm and the infrared region is 700-1200nm. Therefore, the two ranges overlap. Further, there are photosensitizers that absorb in the visible and infrared range. Applicant has not claimed the exclusion of any photosensitizer because of its infrared absorbance. Therefore, Tefler does not teach away from color-forming compositions that are sensitive to visible light.

11. Applicant argues that Weed teaches a combination of 9,10-phenanthrequinone and an acyl ester of triethanolamine as a photodeactivation compound. Further, there is no motivation to use a photodeactivation compound in Tefler.

Applicant discloses quinines and acyl esters of triethanolamines in the instant claim 5. Further, Tefler teaches radiation-sensitive dyes that undergo color change with an increase of temperature.

12. Applicant argues that Tefler does not teach forming a 3D imaging composition as in instant claim 11. Further, that there is no teaching of applying a 3D image to an imaging composition.

Tefler teaches a 3D imaging composition. The 3-D image is applied to the substrate, which is applicant's claimed procedure. Its' specific placement is not claimed. According to page 8 of applicant's specification, "any suitable 3-D imaging system may be used." Since Tefler teaches applying a 3D imaging composition to a workpiece and the composition comprises radiation-sensitive compounds as claimed, then the 3D image composition would affect a color change upon exposure to laser light. This method is representative of the currently claimed 3-D imaging method.

13. Applicant argues that Kangas and Tefler are not properly combined.

Tefler and Kangas are combinable because both references teach a photosensitive composition applied to a substrate. Further, both references teach applying material to the opposite side of the substrate. Kangas teaches an adhesive material for the purpose of adhering photolabels and metal labels to substrates (col. 2, lines 8-12). Therefore it would have been obvious to apply an adhesive to hold the material in place. Whether the material being adhered is a polymer or a metal is not relevant because both substrates have a layer adhered to it, therefore it is obvious to use an adhesive.

14. Applicant states that the 3D image formed by Tefler is orthoscopic and is projected beyond the imaging composition and the lenticular screen.

Tefler teaches that it is conventional in 3-D imaging to use lenticular screen imaging with imaging strips to form 3-dimensional images on substrates in computer modeling (workpieces) (see column 6, lines 1-38 and column 12, lines 29-64).

15. Applicant further argues that Tefler teaches infrared absorbing compositions, not compositions that change color at 5mW, which is in the visible range.

The infrared absorbing compositions of Tefler may also change color at 5mW because milliwatts is a laser power that will perform according to the type of laser being used. Tefler teaches a radiation sensitive layer that undergoes a color change upon increase in temperature for a color forming time (see abstract). Therefore, when heat is applied by laser, the composition will change color. Further, applicant has not claimed a specific type of laser in the instant invention.

16. Applicant argues that Kaufman is directed to forming a 3D image on a contoured surface, not a 3D orthoscopic image as in Tefler. Applicant further argues that there is no motivation to apply a 3D image onto an image composition in the rejection of Tefler in view of Kaufman.

Kaufman still teaches a 3D imaging composition. Therefore, Kaufman and Tefler are in the same field of endeavor. In addition, figure 1 of Kaufman is the same as figure 1 of the instant application. Tefler teaches the imaging process (see Tefler, col. 12, lines 39-49). Tefler teaches that the imaging compositions are applied to a workpiece, but not the process of applying the imaging composition to the workpiece. Kaufman is used to

show the method of forming the image on a workpiece. Both Tefler and Kaufman teach 3D imaging compositions therefore motivation is sufficient to combine the references.

17. Applicant argues that there is no disclosure that the infrared laser light in Tefler is three dimensional.

Examiner does not agree. Applicant is directed to column 14, lines 40-45, wherein Tefler specifically teaches infrared laser beams from a laser light source. Only an infrared laser can produce laser beams that emit infrared rays. Further, applicant does not specifically claim an infrared laser in the instant invention.

Conclusion

18. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Connie P. Johnson whose telephone number is 571-

272-7758. The examiner can normally be reached on 7:30am-4:00pm Monday thru Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia Kelly can be reached on 571-272-1526. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Connie P. Johnson
Examiner
Art Unit 1752

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